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ABSTRACT OF THE DISCLOSURE

A power system includes a device for extracting energy from a hot gas stream to power a driveshaft. An evaporative duplex counterheat exchanger is disposed in flow communication with the energy extracting device. The duplex exchanger includes a first heat exchanger having a first main flow channel, and a counterheat channel joined in flow communication therewith. A second heat exchanger includes a second main flow channel adjacent the counterheat channel. And, an evaporative fluid is injected into the counterheat channel to evaporatively cool the flow through both main flow channels.